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FIG.1A

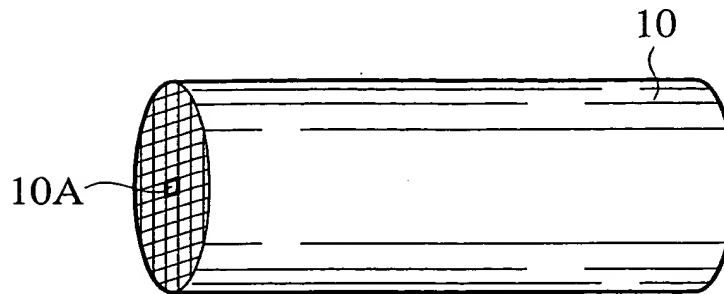


FIG.1B

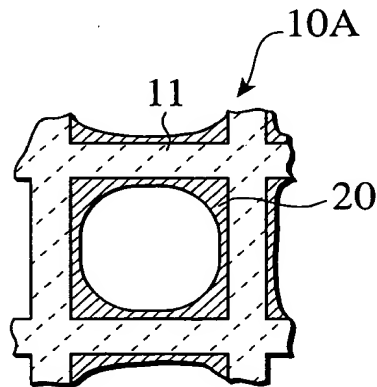


FIG.2

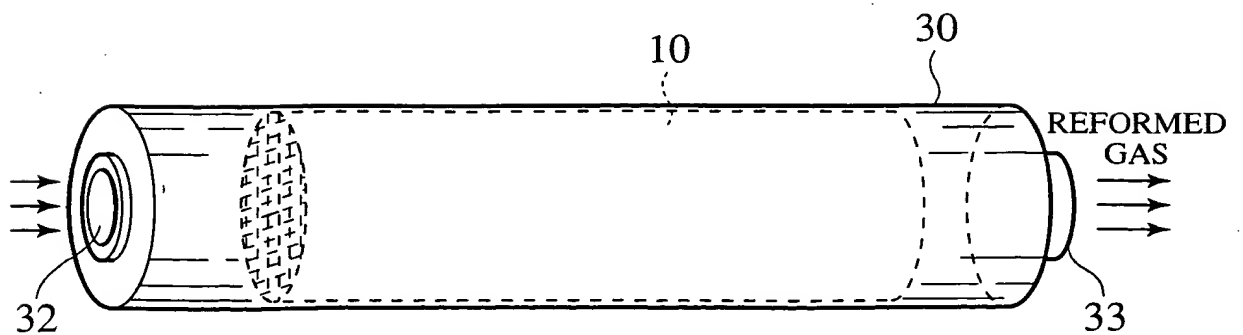


FIG.3

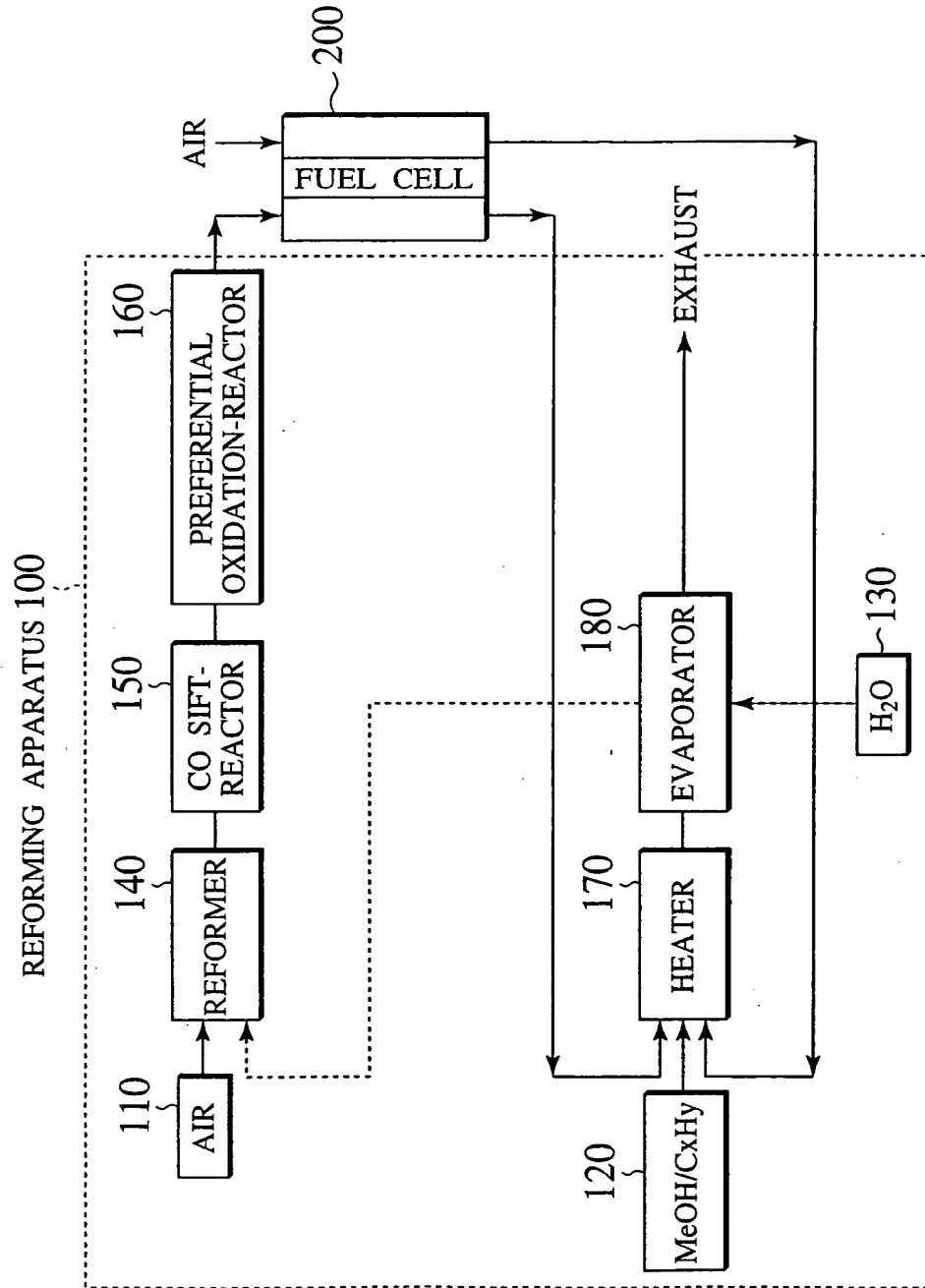
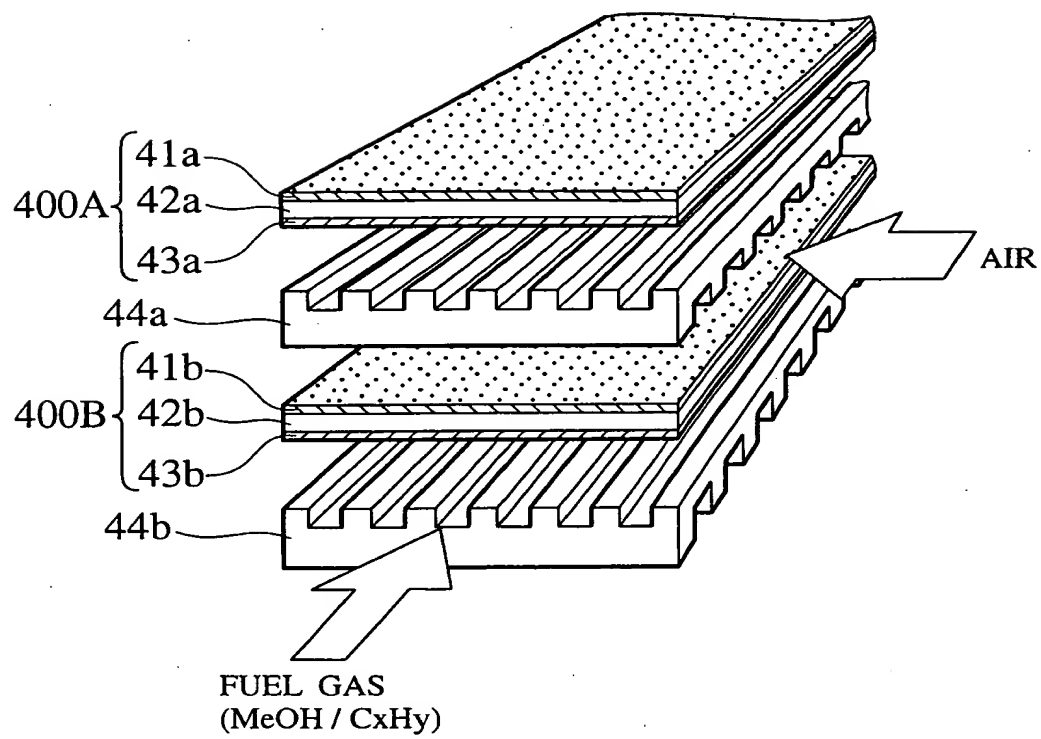


FIG.4



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FIG.5A

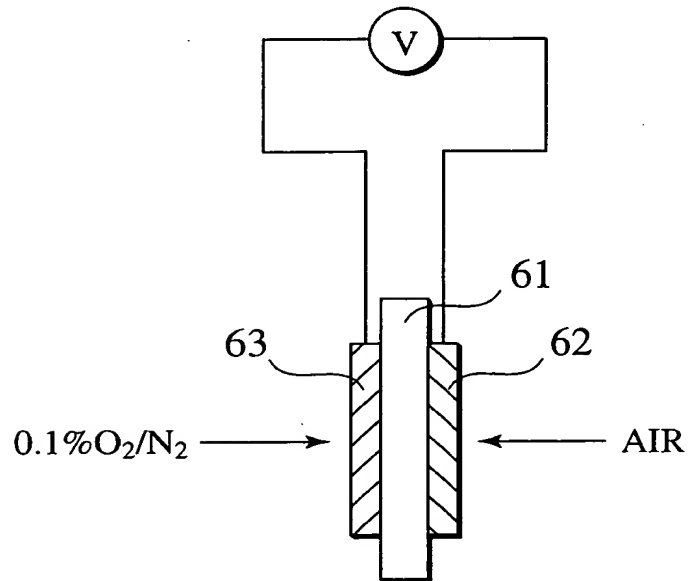
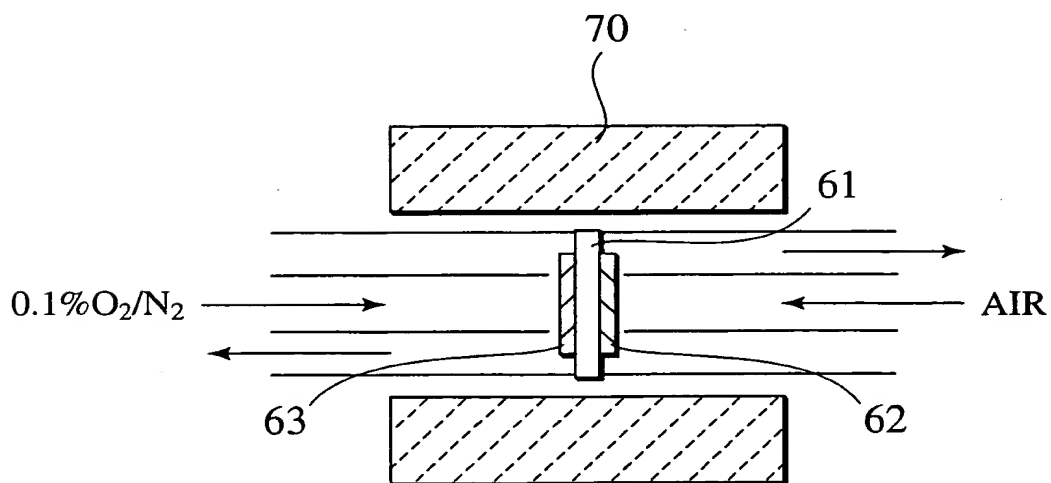


FIG.5B



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# FIG.6

Table.1

Example No.	La-nitrate (g)	Pr-nitrate (g)	Gd-nitrate (g)	Ce-nitrate (g)	Sm-nitrate (g)	Fe-nitrate (g)	Ru-nitrate (3.6wt% solution)	Rh-nitrate (8.5wt% solution)	Pd-nitrate (8.5wt% solution)	Pt-nitrate (8.5wt% solution)
example 1	389.7	-	428.5	-	44.4	-	140.4	-	-	-
example 2	346.4	-	428.5	-	88.8	-	140.4	-	-	-
example 3	-	-	428.5	390.6	44.4	-	140.4	-	-	-
example 4	389.7	43.5	-	-	-	323.2	-	240	-	-
example 5	346.4	87.0	-	-	-	323.2	-	240	-	-
example 6	303.1	130.5	-	-	-	323.2	-	240	-	-
example 7	346.4	87.0	-	-	-	202	-	605	-	-
example 8	346.4	87.0	-	-	-	80.8	-	968	-	-
example 9	389.7	43.5	-	-	-	323.2	561.7	-	-	-
example 10	346.4	87.0	-	-	-	323.2	561.7	-	-	-
example 11	303.1	130.5	-	-	-	323.2	561.7	-	-	-
example 12	346.4	87.0	-	-	-	202	1404	-	-	-
example 13	346.4	87.0	-	-	-	80.8	2247	-	-	-
example 14	-	-	360.8	347.2	88.9	-	561.7	-	-	-
example 15	-	-	360.8	347.2	88.9	-	-	240	-	-
example 16	346.4	87.0	-	-	-	80.8	-	-	1127	-
example 17	346.4	87.0	-	-	-	80.8	-	-	-	1835
Comparative example 1	389.7	-	428.5	-	44.4	-	140.4	-	-	-
Comparative example 2	389.7	-	428.5	-	44.4	-	-	-	-	-

FIG.7

Table.2

Example No.	Catalyst	Amount of each element per a catalyst unit									
		La (g)	Pr (g)	Gd (g)	Ce (g)	Sm (g)	Fe (g)	Ru (g)	Rh (g)	Pd (g)	Pt (g)
example 1	A	4.25	-	5.19	-	0.52	-	0.15	-	-	-
example 2	B	3.74	-	5.19	-	1.03	-	0.15	-	-	-
example 3	C	-	-	5.19	4.08	1.03	-	0.15	-	-	-
example 4	D	6.16	0.69	-	-	-	1.81	-	0.96	-	-
example 5	E	5.47	1.38	-	-	-	1.81	-	0.96	-	-
example 6	F	4.79	2.07	-	-	-	1.81	-	0.96	-	-
example 7	G	5.47	1.38	-	-	-	1.07	-	2.29	-	-
example 8	H	5.47	1.38	-	-	-	0.39	-	3.39	-	-
example 9	I	6.16	0.69	-	-	-	1.81	0.90	-	-	-
example 10	J	5.47	1.38	-	-	-	1.81	0.90	-	-	-
example 11	K	4.79	2.07	-	-	-	1.81	0.90	-	-	-
example 12	L	5.47	1.38	-	-	-	1.07	2.11	-	-	-
example 13	M	5.47	1.38	-	-	-	0.39	3.14	-	-	-
example 14	N	-	-	4.49	3.72	1.06	-	0.62	-	-	-
example 15	O	-	-	4.49	3.72	1.06	-	-	0.70	-	-
example 16	P	5.47	1.38	-	-	-	0.39	-	-	2.88	-
example 17	Q	5.47	1.38	-	-	-	0.39	-	-	-	4.68
Comparative example 1	X	4.25	-	5.19	-	0.52	-	0.15	-	-	-
Comparative example 2	Y	4.25	-	5.19	-	0.52	-	-	-	-	-

FIG.8

Table.3

Example No.	Catalyst	Catalyst composition	Amount of remaining MeOH (%)	Reformation rate (%)
example 1	A	La <sub>0.9</sub> Sm <sub>0.1</sub> Gd <sub>0.95</sub> Ru <sub>0.05</sub> O <sub>3</sub>	0.98	99.02
example 2	B	La <sub>0.8</sub> Sm <sub>0.2</sub> Gd <sub>0.95</sub> Ru <sub>0.05</sub> O <sub>3</sub>	0.96	99.04
example 3	C	Ce <sub>0.9</sub> Sm <sub>0.1</sub> Gd <sub>0.95</sub> Ru <sub>0.05</sub> O <sub>3</sub>	1.02	98.98
example 4	D	La <sub>0.9</sub> Pr <sub>0.1</sub> Fe <sub>0.8</sub> Rh <sub>0.2</sub> O <sub>3</sub>	0.54	99.46
example 5	E	La <sub>0.8</sub> Pr <sub>0.2</sub> Fe <sub>0.8</sub> Rh <sub>0.2</sub> O <sub>3</sub>	0.48	99.52
example 6	F	La <sub>0.7</sub> Pr <sub>0.3</sub> Fe <sub>0.8</sub> Rh <sub>0.2</sub> O <sub>3</sub>	0.40	99.60
example 7	G	La <sub>0.8</sub> Pr <sub>0.2</sub> Fe <sub>0.5</sub> Rh <sub>0.5</sub> O <sub>3</sub>	0.37	99.63
example 8	H	La <sub>0.8</sub> Pr <sub>0.2</sub> Fe <sub>0.2</sub> Rh <sub>0.8</sub> O <sub>3</sub>	0.23	99.77
example 9	I	La <sub>0.9</sub> Pr <sub>0.1</sub> Fe <sub>0.8</sub> Ru <sub>0.2</sub> O <sub>3</sub>	0.72	99.28
example 10	J	La <sub>0.8</sub> Pr <sub>0.2</sub> Fe <sub>0.8</sub> Ru <sub>0.2</sub> O <sub>3</sub>	0.68	99.32
example 11	K	La <sub>0.7</sub> Pr <sub>0.3</sub> Fe <sub>0.8</sub> Ru <sub>0.2</sub> O <sub>3</sub>	0.51	99.49
example 12	L	La <sub>0.8</sub> Pr <sub>0.2</sub> Fe <sub>0.5</sub> Ru <sub>0.5</sub> O <sub>3</sub>	0.46	99.54
example 13	M	La <sub>0.8</sub> Pr <sub>0.2</sub> Fe <sub>0.2</sub> Ru <sub>0.8</sub> O <sub>3</sub>	0.38	99.62
example 14	N	Ce <sub>0.8</sub> Sm <sub>0.2</sub> Gd <sub>0.8</sub> Ru <sub>0.2</sub> O <sub>3</sub>	0.65	99.35
example 15	O	Ce <sub>0.8</sub> Sm <sub>0.2</sub> Gd <sub>0.8</sub> Rh <sub>0.2</sub> O <sub>3</sub>	0.53	99.47
example 16	P	La <sub>0.8</sub> Pr <sub>0.2</sub> Fe <sub>0.2</sub> Pd <sub>0.8</sub> O <sub>3</sub>	0.37	99.63
example 17	Q	La <sub>0.8</sub> Pr <sub>0.2</sub> Fe <sub>0.2</sub> Pt <sub>0.8</sub> O <sub>3</sub>	0.40	99.60
Comparative example 1	X	La <sub>0.9</sub> Sm <sub>0.1</sub> Gd <sub>0.95</sub> O <sub>3</sub> / Ru <sup>*</sup>	2.62	97.38
Comparative example 2	Y	La <sub>0.9</sub> Sm <sub>0.1</sub> Gd <sub>0.95</sub> O <sub>3</sub>	3.64	96.36

\* The Ru is impregnated into the perovskite composite oxide.

## FIG.9

Table.4

Example No.	Composition of electrode-catalyst	Electrode- catalyst	Temperature of starting operation Tne (°C)
example 18	La <sub>0.8</sub> Pr <sub>0.2</sub> Fe <sub>0.8</sub> Rh <sub>0.2</sub> O <sub>3</sub>	a	420
example 19	La <sub>0.8</sub> Pr <sub>0.2</sub> Fe <sub>0.5</sub> Rh <sub>0.5</sub> O <sub>3</sub>	b	405
example 20	La <sub>0.8</sub> Pr <sub>0.2</sub> Fe <sub>0.2</sub> Rh <sub>0.8</sub> O <sub>3</sub>	c	387
Comparative example 3	La <sub>0.8</sub> Pr <sub>0.2</sub> Fe <sub>0.8</sub> O <sub>3</sub>	z	650